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DNA Double Strand Break and Repair: Mechanisms and Involvement in Human Cancer

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ABSTRACT The most frequent damage on a cell is the DNA double-strand break (DSB). This is sensed and repaired by normal cellular DSB response pathways. Depending on the phase of the cell at which the DSB is sensed, there are two different pathways for the repair of this lesion, the non homologous end joining (NHEJ) repair and the homologous recombination (HR) repair. Defects in these sensing and repair pathways leads to no repair or inappropriate/abnormal repair. This causes genome instability that results in different disorders among which cancer is the most significant one. We describe how cells repair DSB and the relationship between the defects in this repair system and cancer.

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